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A NOTE ON THE INHERITANCE OF DURATION OF LIFE IN MAN.*

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Experimental studies on *Drosophila* have definitely demonstrated that in that form duration of life is inherited in accordance with Mendelian principles (1, 2). In the case of man all the evidence so far available regarding the inheritance of duration of life has come from statistical studies, notably those of Pearson (3) and his associates, and Alexander Graham Bell (4, 5). This sort of evidence, while entirely cogent as to the main fact of the inheritance of this character, is not such as to make possible the ready determination of the mode of the inheritance, whether Mendelian or other.

Since the publication of my Lowell Lectures on the biology of death, I have received from a number of correspondents bits of data upon one or another phase of the problems therein discussed. Amongst these contributions was an extremely interesting one from a southern lady regarding the facts about duration of life in her own family. This note is based upon the information so received. For obvious reasons names cannot be given here, but I may say, as bearing upon the trustworthiness of the data here set forth, that my informant is a trained observer along biological lines, and is well known for her contributions in one field of biology.

The pedigree shown in Fig. 1 may be first presented, and then the probable meaning of the facts it shows, discussed. It should be noted that in this pedigree ♂ denotes as usual a male individual, ♀ a female, and ○ an individual known to have existed, but about whom I have no further information, even as to sex. The numbers standing above and to the right of each sex sign are the designatory numbers (in lieu of names) of persons included in the pedigree. The numbers

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FIG. 1. Pedigree to show inheritance of duration of life in a southern family. For explanation see text.

within the circle of the sex sign give the ages at death of the individuals in years. All persons shown in the pedigree are dead with the exception of two marked "liv." below the numbers denoting their ages. One of these is my informant, to whom I am greatly indebted, both for furnishing me with the facts and for permitting their publication.

About individuals 3 and 4 no information is at hand. Their father died at the age of about 32 when they were small children. I furthermore have no information about the ancestry of individuals 2, 6, 7 and 8, except that individual 19 was reputed to "belong to a family with a remarkable record for longevity." The ages at death of both individuals 7 and 8 undoubtedly are under their potential longevity. No. 7's death "may be regarded as the nature of an accident, since he was a victim of yellow fever during the epidemic that visited Savannah in 1820." "His wife" (no. 8) "died at 67 of typhus fever contracted by remaining on the plantation to aid in caring for the sick negroes during a violent epidemic of the disease in 1852. As I remember her, she was a woman of wonderful energy and activity up to that time."

TABLE 1.

Survivorship of parents and offspring in pedigree Fig. 1.

Surviving up to	Number surviving to specified time are					
	A. Father's sibship (♂ P).		B. Mother's sibship (♀ P).		C. Offspring sibship (F).	
	Absolute.	Per cent.	Absolute.	Per cent.	Absolute.	Per cent.
Birth.....	10	100	8	100	8	100
10 Years.....	8	80	7	87.5	7	87.5
20 ".....	8	80	6	75	7	87.5
30 ".....	6	60	6	75	7	87.5
40 ".....	5	50	6	75	7	87.5
50 ".....	1	10	6	75	7	87.5
60 ".....	1	10	6	75	6	75
70 ".....	1	10	4	50	3	37.5
80 ".....	0	0	2	25	2	25
80 and over.....	0	0	2	25	2	25
Mean duration of life*	33.7 years		59.1 years		60.9 years	

* Counting the "infant" as aged 1, and taking the two living at present age.

The data of the pedigree are arranged in the form of survivorship figures in Table 1. Column *A* gives the survivorship relations of the family containing individuals 9 to 18 inclusive; Column *B* gives the same material for the family containing individuals 19 to 26 inclusive; and Column *C* the family containing individuals 27 to 34 inclusive. On account of the small numbers involved no attempt is made to smooth in any way the l_x lines. They are merely the observed frequencies of survival.

FIG. 2. Showing survivorship in three groups of sibs. The data of Column *A* of Table 1 are given as a solid line, those of Column *B* as a dash line, and those of Column *C* as a dot line.

The percentage columns of Table 1 are exhibited graphically in Fig. 2.

It is apparent from the table and diagram that the interest of this case lies in the fact that it represents the crossing of a short-lived with a fairly long-lived stock. In the father's sibship only 10 per cent. survived to age 50, in the mother's sibship 75 per cent. survived to that age, and in the offspring sibship 87.5 per cent.

Making due allowance for the irregularity of the survivorship lines of Fig. 2, consequent upon the small absolute numbers, the resemblance of this diagram to what one gets in a controlled Mendelian experiment on duration of life in *Drosophila* (cf. Fig. 4, p. 149, in my paper on the Biology of Death, VI, loc. cit.) is striking.

No conclusion can be drawn from a single pedigree of this sort, of course, but the case suggests the desirability of analyzing extensive genealogical material in a similar manner. This I hope to be able to do later, upon material now accumulating in this laboratory.

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